

DP-302477

SCALEABLE INTER-DIGITIZED TINE  
NON-THERMAL PLASMA REACTOR

## ABSTRACT OF THE DISCLOSURE

A scaleable inter-digitized tine non-thermal plasma reactor element includes at least one pair of inter-digitized tine end connectors connected together defining gas passages between the tines. The prepared  
5 inter-digitized tine reactor element has a scaleable height, width, and length. Connectors are defined that enable efficient non-thermal reactor element fabrication for widely varying applications having various flow throughput and constituent reduction requirements. An inter-digitized tine reactor element is provided having several zones that are selectively powered so that the effective  
10 length of the reactor can be adjusted during operation for optimal efficiency over a range of operating conditions

Structural carrier connectors and structural conductor connectors are provided. Structural carrier connectors have tines defined in a side to side basis comprising a high-k dielectric layer, electrode layer, structural dielectric,  
15 electrode layer, and high-k dielectric layer. Structural conductor connectors have tines defined in a side to side basis comprising a high-k dielectric layer, structural conductor, and high-k dielectric layer.

The scaleable reactors include double, single or null dielectric barrier inter-digitized tine non-thermal plasma reactors. The double dielectric  
20 barrier reactor has plasma cells bounded by a dielectric barrier in the plasma direction. The single dielectric barrier reactor has plasma cells bounded by a dielectric barrier on one side and by an electrode on the opposite side, in the plasma direction. The null dielectric barrier reactor has plasma cells bounded by electrodes on each side, in the plasma direction.